YSI
a *xylem* brand

WE KNOW™
D.O.

Operating Manual

IQ SENSOR NET MIQ/C6
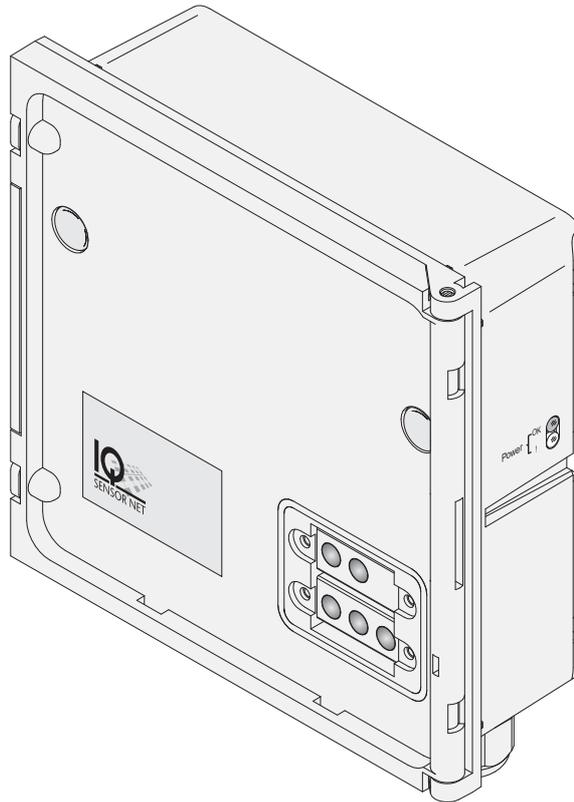
IQ SENSOR NET six-channel current output module

2

Note
For the most recent version of the manual, please visit www.ysi.com.

Contact   YSI
1725 Brannum Lane
Yellow Springs, OH 45387 USA
Tel: +1 937-767-7241
800-765-4974
Email: environmental@ysi.com
Internet: www.ysi.com

Copyright   © 2012 Xylem Inc.

MIQ/C6 - List of contents

1 Overview

1.1 How to use this component operating manual

Structure of the IQ SENSOR NET operating manual
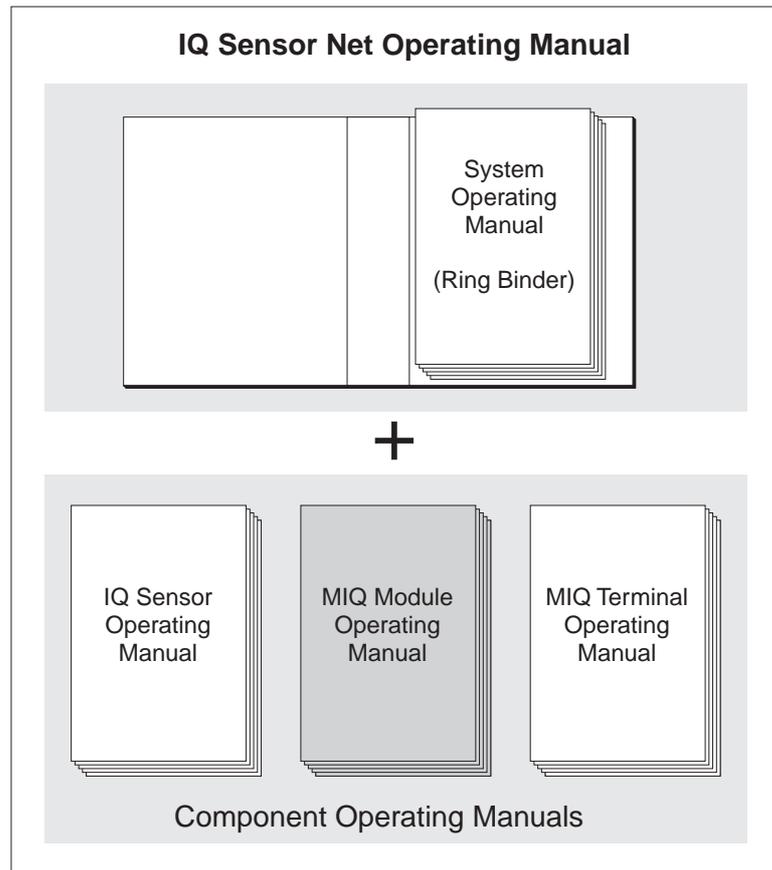
Fig. 1-1   Structure of the IQ SENSOR NET operating manual

The IQ SENSOR NET operating manual has a modular structure like the IQ SENSOR NET itself. It consists of a system operating manual and the operating manuals of all the components used.

Please file this component operating manual into the ring binder of the system operating manual.

1.2   Features of the MIQ/C6

General characteristics   The MIQ/C6 output module has six current outputs. They can be programmed as:

● Analog output (recorder)

● PID regulator

You can link current outputs to sensors. The linked current outputs can be used to monitor sensors or for control purposes.

With the standard MIQ module housing, the MIQ/C6 has the same characteristics as all MIQ modules regarding stability, leakproofness and weather resistance. It also provides the same wide variety of installation options (stacked mounting, canopy mounting, tophat rail mounting, etc.).

Terminal strip   The MIQ/C6 has the following electrical connections on the terminal strip inside the housing:

● 6 x current output

● 2 x SENSORNET connection

2 Safety instructions

This operating manual contains special instructions that must be followed during the installation of the MIQ/C6 current output module. Thus, it is essential for the operator to read this component operating manual before carrying out any work with the system. In addition to this manual, the SAFETY chapter of the IQ SENSOR NET system operating manual must be followed.

Always keep this component operating manual together with the system operating manual and all other component operating manuals in the vicinity of the IQ SENSOR NET system.

General safety instructions

The following safety labels in the individual chapters of this operating manual indicate different levels of danger:

Warning
indicates instructions that must be followed precisely in order to prevent serious dangers to personnel.

Caution
indicates instructions that must be followed precisely in order to avoid slight injuries to personnel or damage to the instrument or the environment.

Other labels

Note
This symbol indicates instructions that describe special features.

Note
indicates cross-references to other documents, e.g. operating manuals.

2.1 Authorized use

The authorized use of the MIQ/C6 consists of providing current outputs in the IQ SENSOR NET.
Please keep to the technical specifications according to chapter 6 TECHNICAL DATA. Only operation according to the instructions in this operating manual is authorized.

Any other use is considered to be **unauthorized**. Unauthorized use invalidates any claims with regard to the guarantee.

2.2 General safety instructions

The MIQ/C6 is constructed and inspected according to the relevant guidelines and norms for electronic instruments (see chapter 6 TECHNICAL DATA).
It left the factory in a safe and secure technical condition.

Function and operational safety
The failure-free function and operational safety of the MIQ/C6 is only guaranteed if the generally applicable safety measures and the special safety instructions in this operating manual are followed during its use.

The failure-free function and operational safety of the MIQ/C6 is only guaranteed under the environmental conditions that are specified in chapter 6 TECHNICAL DATA.

Safe operation
If safe operation is no longer possible, the MIQ/C6 must be taken out of operation and secured against inadvertent operation.
Safe operation is no longer possible if the MIQ/C6:

● has been damaged in transport

● has been stored under adverse conditions for a lengthy period of time

● is visibly damaged

● no longer operates as described in this manual.

If you are in any doubt, contact the supplier of your MIQ/C6.

3 Installation

3.1 Scope of delivery

The scope of delivery of the MIQ/C6 is listed in the INSTALLATION chapter of the system operating manual.

3.2 Installation in the IQ SENSOR NET

The IQ SENSOR NET provides a number of options for integrating the MIQ/C6 mechanically and electrically in the system (stacked mounting, distributed mounting, etc.). The various types of installation are described in detail in the INSTALLATION chapter of the system operating manual.

3.3 Electrical connections: General instructions

Cable glands   All electric cables are fed from below via prepared openings in the enclosure of the MIQ/C6. Cable glands with different clamping ranges are included with the MIQ/C6 to provide sealing between the cable and enclosure as well as for strain relief. Select the matching cable gland for the respective cable diameter:

● **Small**, clamping range 4.5 to 10 mm. This cable gland is suitable for all IQ SENSOR NET sensor cables.

sealing ring 20 x 15 x 1 mm

cable gland M16

blind plug
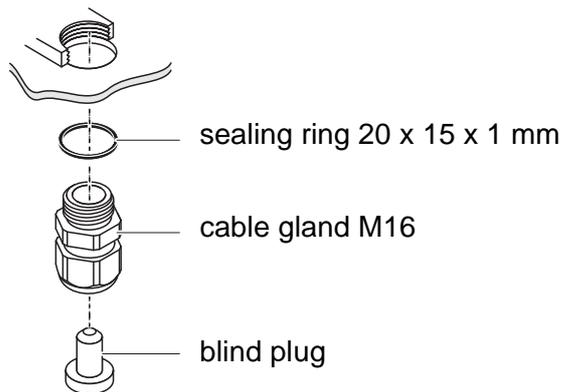
● **Large**, clamping range 7 to 13 mm. This cable gland is required for cable sheaths with an outside diameter of more than 10 mm and is screwed into the enclosure via an extension piece.

sealing ring 20 x 15 x 1 mm

extension piece M16/M20

sealing ring 24 x 19 x 2 mm
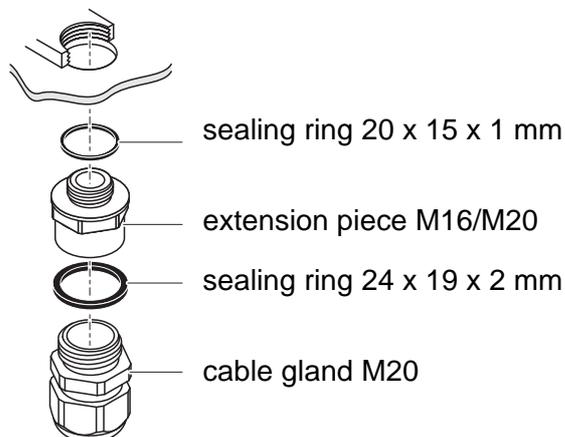
cable gland M20

Note
If necessary, you can order more large cable glands in a set of 4 pieces (Model EW/1, Order No. 480 051).

General installation   Observe the following points when attaching connecting wires to the
instructions   terminal strip

● Shorten all wires to be used to the length required for the installation

● Always fit all the ends of the wires with wire end sleeves before connecting them to the terminal strip

● Any wires that are not used and project into the enclosure must be cut off as closely as possible to the cable gland.

● Screw a small cable gland with sealing ring into each remaining free opening and close it with a blind plug.

3.4   Connections to the current outputs

Materials required   ● Wire end sleeves, suitable for the connecting wires, with suitable crimping tool

● 4 x cable gland with sealing ring (scope of delivery MIQ/C6)

Tools   ● Cable stripping knife

● Wire stripper

● Phillips screw driver

● Small screw driver

Connecting lines to the terminal strip

1	Open the module.
2	Open the dummy screw fitting under the required connection. Keep the dummy screw fitting for possible later modifications.

X18	X17	X16	X15	X14	X13		X12	X11	X10	X9	X8	X7	⚠	X6	X5	X4		X3	X2	X1
0/4...20mA		0/4...20mA		0/4...20mA			0/4...20mA		0/4...20mA		0/4...20mA			RED	SHIELD	GREEN		RED	SHIELD	GREEN

Current outputs
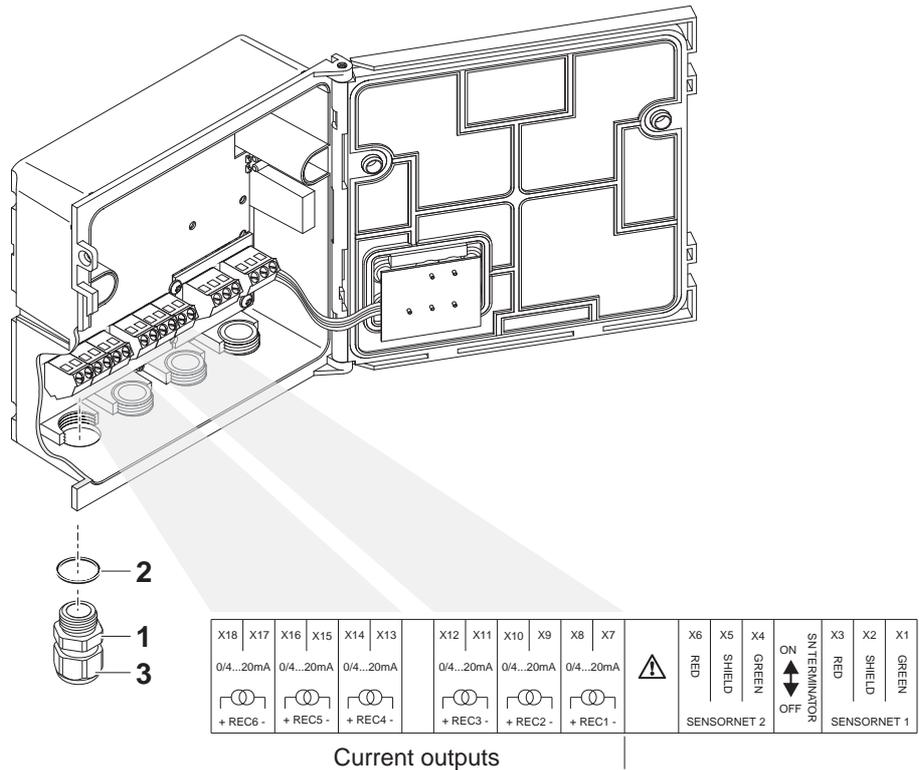
Fig. 3-1   Terminal strip with the current connections

3	Screw the cable gland (pos. 1 in Fig. 3-1) with the sealing ring (pos. 2) into the module housing.
4	Loosen the coupling ring (pos. 3 in Fig. 3-1).
5	Feed the line through the cable gland in the module housing.
6	Connect the wires to the terminal strip. While doing so, pay attention to the specifications on the label located under the terminal strip.
7	Tighten the coupling ring (pos. 3 in Fig. 3-1).
8	Close the module.

4 Settings

The MIQ/C6 module has six current outputs that supply a current that depends on the measured value.

On the terminal, you can:

● assign names to the outputs (see section 4.1).

● link outputs with sensors (see section 4.2)

● delete links of outputs with sensors (see section 4.3)

● adjust outputs (see section 4.4)

● check the condition of the outputs (see section 4.5)

Note
The general operating principles are given in the system operating manual or in the component operating manual of the terminal components.

4.1 Entering / editing the name of an output

For easier identification of the outputs, an individual name can be given to each output in the *Edit list of outputs* overview.

1	Open the *Settings* menu with $\textcircled{S}$.
2	Select and confirm the menu item *System settings -> Edit list of outputs* with $\textcircled{\downarrow}$ and $\textcircled{OK}$. The *Edit list of outputs* display opens.
3	Highlight a name in the *Name* column with $\textcircled{\downarrow}$ and confirm with $\textcircled{OK}$.

```
Terminal 1       15 May  2004 14:53  🔒 ⚠ ①
Edit list of outputs                      130
No. Model/Channel    Ser. no.   Name
D01 MIQ/C6/C1        12345678   O2-Belebung
D01 MIQ/C6/C2        12345678   O2-Belebung
D01 MIQ/C6/C3        12345678   NO3-Beleb
D01 MIQ/C6/C4        12345678   ▓▓
D01 MIQ/C6/C5        12345678
D01 MIQ/C6/C6        12345678
?02 MIQ/CR3/R1       22222222   GW1 Trübung
?02 MIQ/CR3/R2       22222222   GW2 Trübung
D03 MIQ/CR3/C1       66666666   Schlammpgl
D03 MIQ/CR3/C2       66666666   Trüb Abl
D03 MIQ/CR3/R1       66666666   Trüb Zul
Select character ↕, confirm character ▓
```

Fig. 4-1   130 - Edit list of outputs

4	Select a letter, a numeral or a special character with $\textcircled{\downarrow}$ and confirm with $\textcircled{OK}$.
5	Complete the name of the output and confirm with $\textcircled{OK}$.

4.2 Linking the output with a sensor

1	Open the *Settings* menu with Ⓢ.
2	Select and confirm the menu item *System settings -> Settings of outputs and links* with ↻ and ⓄⓀ. The *Settings of outputs and links* display opens.
3	Highlight the column with ↻ and confirm with ⓄⓀ.
4	Highlight an output with ↻ and confirm with ⓄⓀ. The *Link with...* display opens. The display shows a list of the sensors to which a link is possible.

```
Terminal 1      │15 May  2004│14:53│ 🔒 │ ⚠ │ ⓘ
Link with...
  │No.│Sensor name│      Measuring range
  │S01│01341000   │02  0.0 ... 60.0 mg/L
  │S03│99160001   │pH  0..14




Select sensor ↻, confirm ⓄⓀ
```

Fig. 4-2   150 - Settings of outputs and links: Link with...

5	Select a sensor with ↻ and confirm with ⓄⓀ. The output is linked with the selected sensor.

Note
Outputs that are linked with sensors can be identified in the *Ser. no.* field of the *Settings of outputs and links* overview by the specification of the linked sensor.

4.3 Deleting a link with an output

If a link from a current output with a sensor is no longer required, the link can be deleted.

1	Open the *Settings* menu with Ⓢ.
2	Select and confirm the menu item *System settings -> Settings of outputs and links* with Ⓒ and ⓄⓀ. The *Settings of outputs and links* display opens.
3	Highlight the column with Ⓒ and confirm with ⓄⓀ.
4	Highlight a linked output with Ⓒ and confirm with ⓄⓀ.
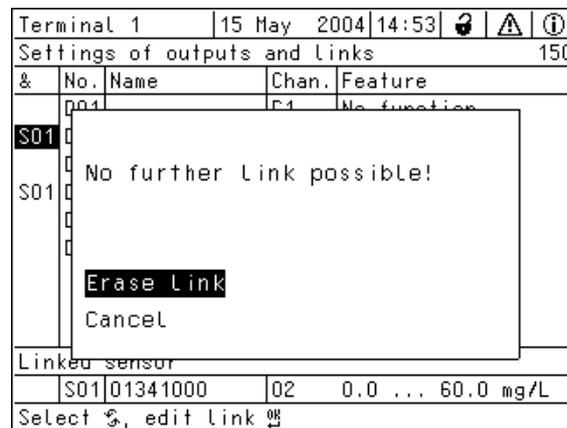
Fig. 4-3   150 - Settings of outputs and links: Erase link

5	Select *Erase link* with Ⓒ and confirm with ⓄⓀ. A security prompt appears.
6	Select *Erase link* with Ⓒ and confirm with ⓄⓀ. The link is deleted.

4.4 Setting current outputs

1	Call up the measured value display with Ⓜ.
2	Open the *Settings* menu with Ⓢ.
3	Highlight the *Settings of outputs and links* menu item with 🔁 and confirm with 🆗. The *Settings of outputs and links* display appears.
4	Highlight the *Feature* column with 🔁 and confirm with 🆗.
5	Highlight a line for a current output (Cx) in the *Feature* column with 🔁 and confirm with 🆗. The *Settings of outputs and links* display opens.
6	Highlight the *Current output* menu item with 🔁 and confirm with 🆗.

```
Terminal 1       |15 May  2004|14:53| 🔒| ⚠ | ①
Settings of outputs and links                    150
┌─────────────────┐
│ Current output  │     No function
└─────────────────┘
 Save and quit
 Quit




Select setting ⑤
```
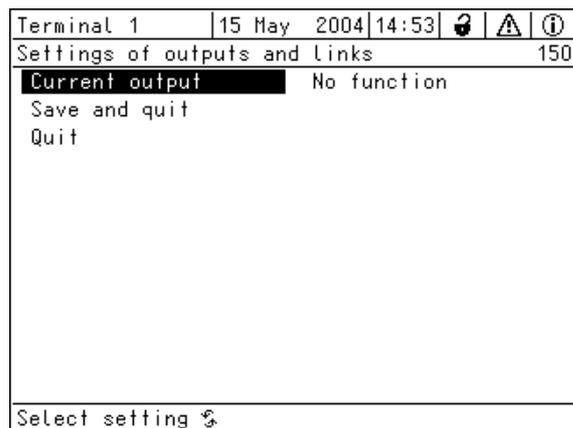
Fig. 4-4   150 - Settings of outputs and links

7	Select a function with 🔁 and confirm with 🆗.

Function	Settings
No function	The current output is not used.
Recorder	see section 4.4.1
PID controller	see section 4.4.2
Fixed current value	see section 4.4.3

8	Carry out the settings for the current output with ⟳ and ⊛.
9	Highlight and confirm *Save and quit* with ⟳ and ⊛. The new settings are stored.

4.4.1 *Recorder*

Function

In the *Recorder* application, the measured values of the linked sensor are set up as current intensity at the current output. The output of measured values is laid down in the *Recorder type*, *Start value* and *End value* settings.

Settings

Setting	Selection/Values	Explanation
Recorder type	0 to 20 mA or 4 to 20 mA	
Start value *End value*	within the measuring range (sensor-dependent)	Minimum spacing: 5 % of the measuring range
Measured variable	*Main variable* *Adjoining variable*	*Main variable* designates the actual measured variable of the sensor (e.g. pH, oxygen, etc.). *Adjoining variable* designates an additional measured variable (e.g. temperature).
Attenuation	0 ... 40 mA/s	Speed of change of the output current (mA/s) in the case of an erratic change of the input signal.
I -> OFL/UFL	*Error*	Current values outside the range between *Start value* and *End value* are considerd as errors. The current output reacts as specified under *Behavior at error* (see below).
	Limitation	The current at the output is limited to the *Start value* or *End value*.

Behavior at error	*Fixed current value*	In the case of system and sensor errors, the current output supplies the specified *Current with error*. Possible values: 0 ... 21 mA. (Details on behavior of outputs, see section 4.6.1)
	Unchanged	The current at the time of the occurrence of the error remains unchanged. (Details on behavior of outputs, see section 4.6.1)

4.4.2   *PID controller*

Function   With the *PID controller* function, you can use an output as a controller output. The controller can be configured as a **P**roportional controller with a switchable **I**ntegral and **D**erivative controller part (**PID** controller).

The control mode of the PID controller is described by the following equation:

$$I_{Controller} = I_0 + K \left(x_e + \frac{1}{T_i} \int x_e dt + T_d \frac{dx_e}{dt} \right)$$

with:

$$K = \frac{I_{max} - I_{min}}{X_p}$$

$$x_e = x_{nom} - x_{actual}$$

$$I_{min} \leq I_{Controller} \leq I_{max}$$

$I_{Controller}$	Current at the controller output at time t
I_0	Current at output if $x_{actual} = x_{nominal}$
K	Gain
X_p	Proportional band
x_e	Error signal
x_{actual}	Actual value (current measured value)
x_{nom}	Nominal value
ti	Integral control part
td	Derivative control part
t	Time
I_{min}	Lower current limitation
I_{max}	Upper current limitation

The adjustable control parameters are $x_{nominal}$, I_0 , X_p , I_{min} , I_{max} , ti and T_d (see setting table on page 4-11).

By activating or deactivating the **I**ntegral (*ti*) and **D**erivative (*td)* controller part, the following controller types can be configured:

Controller type	*td* [s]	*ti* [s]
P controller	0	0
PI controller	0	1 to 9999
PD controller	1 to 9999	0
PID controller	1 to 9999	1 to 9999

Characteristic curve of the proportional controller

For a P controller, the interrelationship between the measured value and current I at the controller output forms the following characteristic curve:
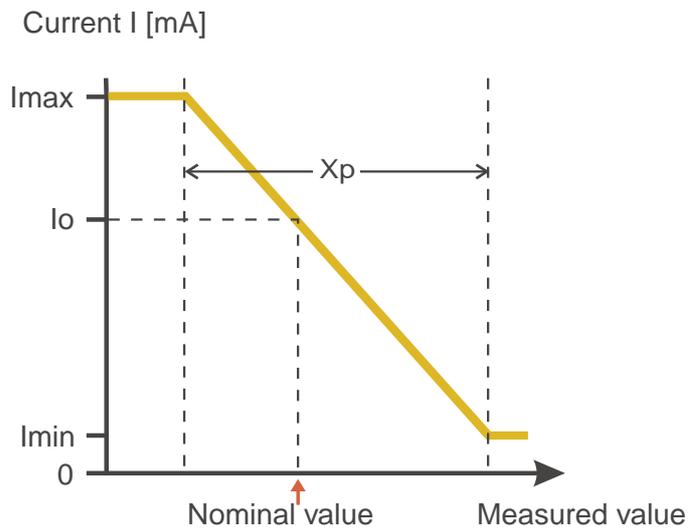
Fig. 4-5   Proportional controller (negative characteristic curve)

The proportional band *Xp* is limited by the measuring range of the linked sensor. If a value is entered for the parameter *Xp* that is greater than zero, the controller has a negative characteristic curve (example Fig. 4-5). To obtain a positive characteristic curve, a negative value must be entered for *Xp* .

Application example   ● Feedback control of the D. O. concentration

● Sensor: TriOxmatic 700 IQ (measuring range: 0 ... 60 mg/l)

Control parameters	Value
Nominal value	4 mg/l
Xp	10 % of the measuring range or 6 mg/l
Imin	8 mA
Imax	14 mA
Io	12 mA
ti	0 s (no I controller part)
td	0 s (no D controller part)

The control parameters form the following (negative) characteristic curve:
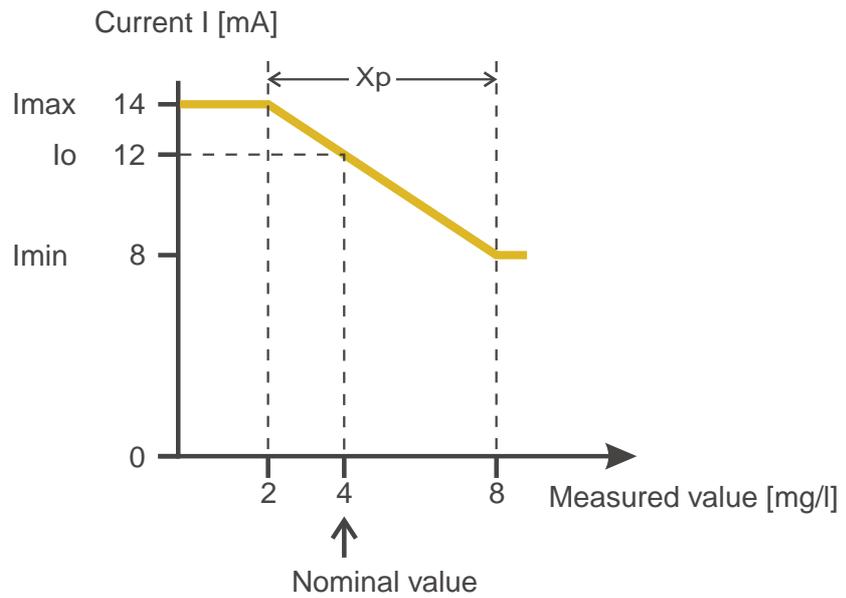
Fig. 4-6   Characteristic curve for application example

The controller works with the following gain:

$$K = \frac{6\ mA}{6\ mg/l} = 1\,\frac{mA}{mg/l}$$

Within the proportional band, a concentration increase by 1 mg/l causes a decrease of the current output by 1 mA. If, for example, the measured concentration is 5 mg/l, 11 mA are output:

$$I_{Controller} = 12\,mA + 1\,\frac{mA}{mg/l} \cdot \left(4\,mg/l - 5\,mg/l\right)$$

$$I_{Controller} = 12\,mA + 1\,\frac{mA}{mg/l} \cdot \left(-1\,mg/l\right) = 11\,mA$$

The highest concentration with which the controller works within the proportional band is 8 mg/l (corresponding to *Imin* = 8 mA), the lowest one is 2 mg/l (corresponding to *Imax* = 14 mA).

Settings

Setting	Selection/Values	Explanation
Measured variable	*Main variable* *Adjoining variable*	*Main variable* designates the actual measured parameter of the sensor (e.g. pH, oxygen, etc.). *Adjoining variable* designates an additional measured parameter (e.g. temperature).
Nominal value	*within the measuring range (sensor-dependent)*	Nominal value the measured value is regulated to
Xp	*5 ... 100 %* *-5 ... -100 %* *of the measuring range*	Proportional band of the controller. Negative values result in a positive characteristic curve.
Imin	*0 ... 20 mA*	Lower current limitation *
Imax	*0 ... 20 mA*	Upper current limitation * * Note: Spacing between *Imin* and *Imax*: at least 5 mA

Setting	Selection/Values	Explanation
Io	*0 ... 20 mA*	Current value on the output if the measured value equals the *Nominal value*
ti	*0 ... 9999 s*	Hold-back time: Integral part of the controller (*0* = not effective)
td	*0 ... 9999 s*	Reset time: Derivative part of the controller (*0* = not effective)
Behavior at error	*Fixed current value*	In the case of an error, the current output supplies the current value defined in the *Current with error* field (any in the range *0 ... 21 mA).*
	Unchanged	In the case of an error, the current on the output remains unchanged.

4.4.3 *Fixed current value*

Function   With the *Fixed current value* function, you can test the operativeness of the instruments connected to the outputs: output different current values to the output and, while doing so, check the behavior of the connected instrument.

Setting	Selection/Values	Explanation
Current output	*Fixed current value*	Using *Save and quit*, the nominal amperage that was input as *Inom* is output.
Inom	0 ... 20 mA	The nominal amperage that is output.

Note
The settings for other functions in the *Current output* menu, as for example *PID controller* and *Recorder*, are retained while the *Fixed current value* is carried out.

4.5 Checking the status of the outputs

This function offers a simple overview of the states of all outputs of a MIQ/C6.

For current outputs, the current value available at the output is displayed.

The *Status of output channels* function is available in the *Settings/Service/List of all components* menu.

1	Call up the measured value display with Ⓜ.
2	Open the *Settings* menu with Ⓢ.
3	Highlight the *Service* menu item with Ⓖ and confirm with Ⓞ🄺. The *Service* dialog box opens.
4	Select the *List of all components* menu item with Ⓖ and confirm with Ⓞ🄺. The *List of all components* dialog box opens.
5	Select the required component (column *Model*, entry MIQ/C6) with Ⓖ and confirm with Ⓞ🄺. The *Status of output channels* window opens.

```
Terminal 1      15 May  2004 14:53  🔒 ⚠ ①
Status of output channels                394
No. Name        Chan. Status
D01 O2-Belebung  C1    14.12 mA
D01 O2-Belebung  C2     1.15 mA
D01 N03-Beleb    C3     0.00 mA
D01 CSB Zulauf   C4    12.06 mA
D01              C5     0.00 mA
D01              C6     0.00 mA




Return ESC
```

Fig. 4-7   394 - Status of output channels

6	Using Ⓜ or Ⓔ🅂🄲, exit the *Status of output channels* window.

4.6 Behavior of linked outputs

4.6.1 Behavior in case of error

For linked current outputs, you can determine the behavior of the outputs inthe case of an error.

Depending on the function of the output, the behavior in case of errors is set in the following menus:

Function	Menu
Recorder	*Behavior at error* (see section 4.4.1)
PID controller	*Behavior at error* (see section 4.4.2)

Error events   The defined behavior occurs in the case of the following events or conditions:

● The linked sensor does not supply a valid measured value (display of *Init*, *Error*, *"-----"*, or *OFL)*

● Communication of the MIQ/C6 with the IQ SENSOR NET controller is disturbed for longer than 2 minutes.

● The supply voltage for the MIQ/C6 is too low.

● In the *Recorder* function, the measured value of the linked sensor is outside the range between *Start value* and *End value*.

Freezing the states of   Independent of the specified behavior at error, the following conditions
the outputs   lead to the freezing of the output states:

● The linked sensor is in the maintenance condition (display of *Cal*, *Clean*, or a flashing measured value).

● Communication of the MIQ/C6 with the IQ SENSOR NET controller is disturbed for a short time. After the malfunction has lasted for 2 minutes the output changes to the specified behavior in the case of an error.

Resumption of the   The current output automatically returns to its normal state as soon as
normal function   all error conditions are over and all conditions causing a freezing of the
outputs are cleared.

4.6.2 Behavior in the non-operative condition

In the non-active condition the output current is 0 mA.

An output is non-operative when no function is activated for the output.

An output becomes non-operative in case of

● Power failure
(As soon as the supply voltage is sufficient again, the non-operative condition of the outputs ends. The outputs function as specified by the user again.)

● Erasing a link to a sensor

● Changing the *Measuring mode* setting for a linked sensor

● Changing the *Measuring range* setting for a linked sensor

Note
Before editing sensor settings a note appears on the display to inform you that all links of the sensor with outputs will be erased when you change the *Measuring mode* or *Measuring range* sensor setting.

4.7 Maintenance condition of sensors

The maintenance condition of sensors serves to calibrate, clean, service and repair (remove and replace) sensors.

In the maintenance condition

- the system does not react to the current measured value or the condition of the selected sensor

- linked outputs are frozen

- sensor errors do not prompt changes in the conditions of linked outputs.

Maintenance condition when calibrating

During calibration the maintenance condition of sensors is automatically switched on. After the calibration the sensor remains in the maintenance condition until the maintenance condition is switched off manually (see section 4.7.2)

Manually switching on the maintenance condition

Switch on the maintenance condition manually when you want to clean, service or repair (remove and replace) a sensor (see section 4.7.1).

When you have finished cleaning, servicing or repairing the sensor, switch off the maintenance condition manually (see section 4.7.2).

Note
When a sensor is in the maintenance condition, the measured values or status indications of the sensor in the measured value display flash.

4.7.1 Switching on the maintenance condition

1	Call up the measured value display with Ⓜ.
2	Select the sensor you want to switch on the maintenance condition for with ⟳. The measured values of the sensor do not flash.
3	Open the *Display/Options* menu with ⓄⓀ.
4	Select the *Switch maintenance condition on/off* menu item with ⟳ and confirm with ⓄⓀ. A window that informs you about the maintenance condition opens up.
5	Confirm *Continue* with ⓄⓀ. The selected sensor is in the maintenance condition. Linked outputs are frozen.
6	Call up the measured value display with Ⓜ. The measured values of the sensor flash.

4.7.2 Switching off the maintenance condition

1	Call up the measured value display with Ⓜ.
2	Select the sensor you want to switch off the maintenance condition for with ⟳. The measured values of the sensor flash.
3	Open the *Display/Options* menu with ⓄⓀ.
4	Select the *Switch maintenance condition on/off* menu item with ⟳ and confirm with ⓄⓀ. A window that informs you about the maintenance condition opens up.
5	Confirm *Continue* with ⓄⓀ. The maintenance condition of the selected sensor is switched off. Linked outputs are released.
6	Call up the measured value display with Ⓜ. The measured values of the sensor do not flash.

5 Maintenance and cleaning

5.1 Maintenance

The MIQ/C6 requires no special maintenance. The general maintenance of IQ SENSOR NET components is described in the IQ SENSOR NET system operating manual.

5.2 Cleaning

The cleaning of IQ SENSOR NET components is described in the IQ SENSOR NET system operating manual.

6   Technical data

Note
General technical data on MIQ modules are given in the TECHNICAL DATA chapter of the IQ SENSOR NET system operating manual.

Electrical data	Nominal voltage	Max. 24 VDC via the IQ SENSOR NET (for details, see the TECHNICAL DATA chapter of the IQ SENSOR NET system operating manual)
	Power consumption	3 W
	Protective class	II
	Overvoltage category	II

Instrument safety	Applicable norms	– EN 61010-1
		– UL 3111-1
		– CAN/CSA C22.2 No. 1010.1

Terminal connections	IQ SENSOR NET connections	2 Additional connectable SENSORNET terminator (terminating resistor)
	Number of current outputs	6
	Terminal type	Screw-type terminal strip, accessible by opening the lid
	Terminal ranges	Solid wires: $0.2 ... 4.0$ mm^2 AWG 24 ... 12 Flexible wires: $0.2 ... 2.5$ mm^2
	Line cross-section of cables carrying mains voltage	Europe: $1.5 ... 4.0$ mm^2 USA: AWG 14 ... 12
	Cable feeds	4 cable glands M16 x 1.5 on the underside of the module

6 - 2

Current outputs	Output	Physically separated from the IQ SENSOR NET
	Output current	Can be switched between 0 - 20 mA and 4 - 20 mA In the case of errors, can be set to: 0 ... 21 mA
	Max. initial output voltage	15 V, in the case of missing or incorrect burden
	Max. load	500 Ω
	Accuracy	0.3 % ± 50 μA
	Functions	Programmable as: – Analog output (recorder) – PID regulator – Output with fixed current value (for test purposes)

7   Contact Information

7.1   Ordering & Technical Support

Telephone: (800) 897-4151
                    (937) 767-7241
                    Monday through Friday, 8:00 AM to 5:00 PM ET

Fax: (937) 767-1058

Email: environmental@ysi.com

Mail: YSI Incorporated
                    1725 Brannum Lane
                    Yellow Springs, OH 45387
                    USA

Internet: www.ysi.com

When placing an order please have the following information available:

YSI account number (if available)	Name and Phone Number
Model number or brief description	Billing and shipping address
Quantity	Purchase Order or Credit Card

7.2   Service Information

YSI has authorized service centers throughout the United States and Internationally. For the nearest service center information, please visit www.ysi.com and click 'Support' or contact YSI Technical Support directly at 800-897-4151.

When returning a product for service, include the Product Return form with cleaning certification. The form must be completely filled out for an YSI Service Center to accept the instrument for service. The Product Return form may be downloaded at www.ysi.com and clicking on the 'Support' tab.

8   Lists

8.1   Explanation of the messages

In this chapter you will find a list with all the message codes and corresponding message texts that may occur in the log book of the IQ SENSOR NET system for the MIQ/C6 output module.

Note
Information about

● Contents and structure of the log book and

● Structure of the message code

can be found in the LOG BOOK chapter of the IQ SENSOR NET system operating manual.

Note
All message codes of the MIQ/C6 output module end with the number, "421".

8.1.1   Error messages

Message code	Message text
EA4421	*Current output range undercut* ** Check process* ** Check settings and, if necessary, change them*
EA5421	*Current output range exceeded* ** Check process* ** Check settings and, if necessary, change them*
EI3421	*Burden resistor too large (> 500 Ohm)* *or current loop interrupted* ** Check burden, terminal connections and connection lines*

8.1.2   Informative messages

The MIQ/C6 output module does not send informative messages.

a **xylem** brand

1725 Brannum Lane
Yellow Springs, Ohio 45387 USA
+1 937-767-7241
800-765-4974 (US)
FAX (937) 767-1058
Email: environmental@ysi.com
Internet: www.ysi.com